IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CIF LICENSING, LLC, d/b/a GE LICENSING,	)	C.A. No. 07-170 (JJF)
Plaintiff,	)	
v.	)	
AGERE SYSTEMS INC.,	)	
Defendant.	)	

DECLARATION OF DR. HARRY V. BIMS IN SUPPORT OF PLAINTIFF CIF LICENSING, LLC, d/b/a GE LICENSING'S OPENING CLAIM CONSTRUCTION BRIEF

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FOR THE DISTRICT OF DELAWARE

CIF LICENSING, LLC, d/b/a GE LICENSING Plaintiff, v. AGERE SYSTEMS INC., Defendant.	)	C.A. No. 07-170 (JJF)

DECLARATION OF DR. HARRY V. BIMS
IN SUPPORT OF PLAINTIFF CIF LICENSING, LLC, d/b/a GE LICENSING'S OPENING CLAIM CONSTRUCTION BRIEF

I, Harry Bims, declare as follows:

1. I am over the age of 21 years and am able and competent to testify to the matters set forth in this declaration, and have personal knowledge of these matters.

2. I have been retained by CIF Licensing, LLC, d/b/a GE Licensing ("GE Licensing"), and their counsel, McDermott Will & Emery LLP, as a consulting expert on GE Licensing's lawsuit against Agere Systems Inc. ("Agere").

3. I have been asked to opine as to what a person of ordinary skill in the art would have understood certain terms in the claims and specification to mean at the time the patents-in-suit were filed. Each of my opinions below is from the perspective of what one of ordinary skill in the art at the time each patent was filed would have understood the term to mean.

4. I provide this declaration in support of GE Licensing's Opening Claim Construction Brief regarding the asserted claims of U.S. Patent Nos. 5,048,054 ("the '054

Patent"), 5,428,641 ("the '641 Patent"), 5,446,758 ("the '758 Patent"), and 6,198,776 ("the '776 Patent").

5. For my work as an expert, I am being compensated at my standard rate of $500 per hour. My compensation is not contingent on the opinions I reach or the testimony I provide.

6. In formulating my opinions expressed in this declaration, and in addition to any sources cited herein, I have reviewed and considered the '054 Patent and its prosecution history, the '641 Patent and its prosecution history, the '758 Patent and its prosecution history, and the '776 Patent and its prosecution history. I have also reviewed documents filed in this case, including *CIF Licensing, LLC d/b/a GE Licensing v. Agere Systems Inc.*, C.A. No. 07-170 (JJF) (D. Del.) Agere's Proposed Claim Term Constructions, GE Licensing's Preliminary Claim Construction, Agere's Preliminary Claim Construction, and Joint Submission of Proposed Construction of Claim Terms. In addition, I rely on my own personal knowledge of the field of Digital Communication, as illustrated in my Curriculum Vitae (attached hereto as Exhibit A).

7. I make this declaration of my own personal knowledge, and if called upon as a witness, I could and would testify competently to the matters stated herein.

I. QUALIFICATIONS

8. I am a telecommunications specialist and entrepreneur. I am currently the founder and an expert consultant for Protocomm Systems, LLC and Bims Laboratories, LLC. The services I provide include, without limitation, advocacy in standards-setting, technology assessments, engineering lab testing, and product analysis.

9. I have been studying telecommunications and systems engineering since approximately 1981 and have over twelve (12) years of telecommunications industry experience. As a graduate student at Stanford University, I studied the principles of Digital Communication theory, including without limitation, Data Modulation and Demodulation, Signal Constellations

and Lattices, Shell Mapping, Channel Estimation, Equalization, Filtering, Precoding, Synchronization, and Trellis Coding. My Ph.D. thesis at Stanford addressed the application of trellis coding and precoding to a certain digital modulation system.

10. In 2001, I founded AirFlow Networks, Inc. LLC, which later received three patents on core technology based on the 802.11 specification. From 1999 to 2001, I was responsible for the software architecture for core SGSN (Serving GPRS Support Node) and GGSN (Gateway GPRS Support Node) products for the GPRS (Generic Packet Radio Services) market. I also held management responsibility for the Firmware, Hardware, Performance, and Systems Engineering Groups. Since receiving my Ph.D. in Electrical Engineering from Stanford University in 1993, I have invented, designed, and built a patented two-way pager test system, co-developed a wireless application protocol, and developed a business plan for building network infrastructure for 802.11 enterprise networks.

11. I have co-authored a number of articles on trellis coding—including one presented at the 1991 International Symposium on Information Theory—and am listed as an inventor on eight telecommunications-related patents.

12. I received a Ph.D. in Electrical Engineering from Stanford University in 1993. In 1988, I received an MS in Electrical Engineering, also from Stanford University. I received a BS in Computer and Systems Engineering from Rensselaer Polytechnic Institute in 1985.

13. I have provided additional details about my background and experience in my Curriculum Vitae (Exh. A), which I incorporate herein by reference.

II. LEVEL OF ORDINARY SKILL IN THE ART

14. I understand that factors such as the education level of those working in the field, the sophistication of the technology, types of problems encountered in the art, prior art solutions to those problems, and the speed at which innovations are made may help establish the level of

skill in the art.

15. Based on my experience, including founding my own company and hiring and managing many employees, a person of ordinary skill in the art at the times of the applications for the patents-in-suit,

Patent No.	Shorthand	Filing Date
5,048,054	'054	May 12, 1989
5,428,641	'641	July 23, 1993
5,446,758	'758	July 8, 1993
6,198,776	'776	December 29, 1997

namely from 1989 through 1997, is a person with the experience of one holding at least a Master's Degree in Electrical Engineering with a specialization in the field of Digital Communication. My educational background – including (1) a BS in Computer and Systems Engineering, (2) an MS in Electrical Engineering, and (3) a Ph.D. in Electrical Engineering – encompasses the knowledge and expertise held by an individual with a Master's Degree in Digital Communication.

16. My opinions as to the meaning of certain terms in the asserted claims are stated below.

III. LEGAL BACKGROUND FOR CLAIM CONSTRUCTION

17. I have been informed by counsel for GE Licensing that the interpretation of the patents' claims is an issue to be decided by the Court. This declaration is intended to assist the Court by proffering my opinions on how the terms addressed would have been understood by a person of ordinary skill in the art.

18. I have been informed by counsel for GE Licensing that claim terms should be

construed primarily by the words in the claims themselves and that the meaning ascribed to these words should be that meaning that one of ordinary skill in the art would ascribe to the claims' language.

19. I have been informed that the words of the claims are also to be construed in light of the underlying specification and with attention to the prosecution history, but that limitations should not be imported from the specification or the description of the preferred embodiment.

20. I understand that the prosecution history of a patent is the public record of the interactions between the applicants for a patent and the United States Patent and Trademark Office.

21. I have been informed by counsel for GE Licensing that information outside the claims, specification, and prosecution history, i.e., the so-called "extrinsic evidence," may also be relevant to the interpretation of claims. I have also been informed by counsel for GE Licensing that extrinsic evidence should be considered in the context of the claims, specification, and prosecution history.

22. In addition, I understand that Agere contends that certain claim terms of the '054, '641, and '776 patents are indefinite. I have been informed by counsel for GE Licensing that patents are presumed to be valid, and that a party asserting that a claim is indefinite bears the burden to show this by clear and convincing evidence. I have also been informed by counsel for GE Licensing that a claim term is considered indefinite if it is not amenable to any reasonable construction.

IV. CONSTRUCTION OF PARTICULAR TERMS OF THE PATENTS

23. The following are my opinions regarding the meaning of the claims at issue based on my review and analysis of the claims of the '054, '641 and '776 patents, their respective specifications and prosecution histories, and where appropriate, dictionaries and/or technical

literature. My opinions on claim construction in this declaration are taken from the vantage point of one of ordinary skill in the art.

24. I have reviewed each of GE Licensing's proposed claim constructions and agree with them; they are consistent with and supported by the understanding of one of ordinary skill in the art at the time of the invention of the patents at issue.

A. CONSTRUCTION OF DISPUTED TERMS FOR THE '054 PATENT

1. Receiver ('054 Patent)

25. The term "receiver" is recited in asserted claims 1, 12 and 46 of the '054 patent. GE Licensing proposes that the term "receiver" is used in accordance with its plain and ordinary meaning and that no construction necessary.

26. I agree with GE Licensing's position. The term "receiver" would have been commonly understood by one of ordinary skill in the art at the time of the '054 patent to mean any structure capable of receiving an electrical signal.

27. The `054 patent also provides specific examples of "receiver" that support GE Licensing's position. '054 Patent, Figs. 1 and 2, col. 1:43-48, col. 4:56-64, col. 8:23-30, col. 10:8-52. For example, a person of ordinary skill in the art at the time of the '054 patent would understand that a receiver in remote modem 4 of Figure 1 would include low pass filter (LPF) block 21, automatic gain control (AGC) block 23, analog-to-digital (A/D) converter block 22, receiver block 24, and line probing processor block 58. In addition, a receiver in modem 2 of Figure 1 includes low pass filter (LPF) block 43, automatic gain control (AGC) block 45, analog-to-digital (A/D) converter block 44, receiver block 46, and line probing processor block 54. As shown in Figure 2, a receiver performs the functions indicated by blocks 120, 130, 140, 170, 200, 210, and 220. These functions are included in the functionality of each of the Figure 1 blocks that make up a receiver in either remote modem 4 or modem 2.

28. GE Licensing's position is further supported by contemporary literature. For example, on pp. 3-4 in A. Bruce Carlson's 1986 book Communication Systems, he defines a receiver as having several parts, including

> "The *receiver* operates on the output signal from the channel in preparation for delivery to the transducer at the destination. Receiver operations include *amplification* to compensate for transmission loss, and *demodulation* and *decoding* to reverse the signal-processing performed at the transmitter. Filtering is another important function at the receiver."
>
> "distortion may be corrected, or at least reduced, with the help of special filters called *equalizers*"

29. I am aware that Agere takes a different position and urges that the term means "a hardware device for accepting signals from a remote device." I disagree with Agere's proposed construction because Agere does not state what is meant by "hardware device." In my opinion, the '054 Patent does not limit the claimed structure to a hardware-only device (to the exclusion of software/firmware) in any way.

30. To the extent "hardware device" is intended to exclude the use of multifunction or general use microprocessors or digital signal processors (DSP), it is incorrect. A person of ordinary skill in the art at the time of the '054 patent would have understood that each of the claimed structures of the `054 patent, individually and collectively, could have been implemented in software routines executed using a general use processor or DSP. For example, as Maurice Bellanger states on page xv in his 1984 book, Digital Processing of Signals,

> "The conversion of a continuous analogue signal to a digital form is either performed by processors operating on recordings of the signal, or carried directly in the equipment which sends or receives the signal. The operations which follow this conversion are accomplished on suitably programmed digital computers. These techniques are applied in very different fields, and they are encountered in automation, industrial processes, aeronautics, radar systems, telecommunications, telemetry, medical instrumentation and geophysics."

As shown on the face of the '054 patent, which has application to telecommunications networks, the operations of the line probing processors 54 and 58 follow the conversion of a continuous analog signal to a digital form. Before 1989, such operations were known to those of ordinary skill in the art as being performed using general use processors. In addition, as Leland B. Jackson states on p. 2 in his 1986 book, Digital Filters and Signal Processing:

> "DSP systems falls [sic] into two general categories – hardware and software."
>
> "Widespread application of software signal processing has resulted from the ever-increasing size and speed of computers, the introduction of fast array-processor peripherals, and the explosive growth of the ubiquitous microprocessor."
>
> "Two broad areas of interest can be identified within the field of digital signal processing – digital filters and spectrum analysis"

Certainly, the function of "spectrum analysis," as performed by a "spectrum analyzer," along with other functions of the line probing processor including estimating a frequency response, estimating a power spectral density, and computing a nonlinear distortion indicator, are signal processing techniques, that one of ordinary skill in the art understood could be performed on a microprocessor or digital signal processor.

31. At the time of the '054 patent, there were numerous implementations of modems offered for sale that included a multifunction general processor or digital signal processor that could be used to perform certain of the claimed functions. For example, the company Zilog commercially sold modems as early as 1984 that included a microprocessor that performed digital signal processing (DSP) functions (www.zilog.com/company/history_detail.asp).

2. Line Probing Processor ('054 Patent)

32. The terms "line probing processor" and "line probe processor" are recited in asserted claims 1 and 46, and 12, respectively, of the '054 patent. I understand that GE Licensing proposes that the term "line probing processor" should be construed to mean

"structure that processes a line probing signal." I note that the term "line probing processor" is used in asserted claims 1 and 46, and the term "line probe processor" is used in asserted claim 12. One of ordinary skill in the art would understand that these two terms are equivalent, and I will address them both as "line probing processor" below.

33. I agree with GE's construction. At the time of the '054 patent, one of ordinary skill in the art would have understood that the term "line probing processor" had no special meaning outside of the context of the'054 patent. It is merely a processor that performs the claimed line probing functions. The patent specification describes the function and structure of a line probing processor in several places. For example, Col. 1:68-2:2 of the '054 patent states that the function of the line probing processor is "for measuring characteristics of the channel based upon the received line probing signal." Col. 10:48-52 further describes the line probing processor functions "processor 58 begins a spectrum analysis of the received probing signal (step 170). First, line probing processor 58 measures the channel and noise spectra and from these computes SNR(f) and then the decoder SNRs." Also, Col. 5:5-9 of the '054 patent states "In general, local modem 2 sends its probing signal sequence $x_1(n)$ to line probing processor 58 of the remote modem, which uses the corresponding received signal sequence to compute the signal-to-noise ratio (SNR) for channel A as a function of frequency." A person of ordinary skill in the art at the time of the '054 patent would understand that "measuring," "spectrum analysis," and "computes" are terms that inform the reader that the line probing processor "processes" a line probing signal.

34. The structure of specific embodiments of the line probing processor is also described in several places in the specification of the '054 patent. While these structures do not limit the term "line probing processor" in any way, they are informative. In one example, the

line probing processor includes a "spectrum analyzer" (Col. 2:19-21, and Col. 3:13-15), "a module for estimating a frequency response for the channel" (Col. 2:21-22), "a module for estimating a power spectral density of channel noise" (Col. 2:25-26), an "offset monitor" (Col. 2:55-56), and a "module for computing a nonlinear distortion indicator" (Col. 3:16). Further, the specification reads "Line probing processors 54 and 58 employ the Fast Fourier Transform (FFT) technique to compute SNR(f) for their respective channels." (Col. 5:62-63). A person of ordinary skill in the art at the time of the '054 patent would have understood that each of these exemplary structures, individually and collectively, could have been implemented in software routines executed using a general use processor or digital signal processor (see the discussion above).

35. I am aware that Agere takes a different position and urges that the term means "a hardware component that processes a line probing signal." See Exhibit B to the Joint Submission of Proposed Construction of Claim Terms. I disagree with Agere's construction because it incorporates "hardware component" which is not supported by the specification or the file history. This construction is wrong to the extent Agere's proposed "hardware component" is intended to limit this term to a hardware-only device or to a single-function "component." For the reasons discussed above in paragraphs 29-31, a person of ordinary skill in the art at the time of the '054 patent would understand that each of the claimed structures of the `054 patent, including the line probing processor, can be implemented in software routines that are executed using a general use processor or DSP.

3. Selector ('054 Patent)

36. The term "selector" is recited in asserted claims 1, 12 and 46 of the '054 patent. I understand that GE Licensing proposes that the term "selector" should be construed in accordance with its plain meaning and that no specific construction is needed.

37. I agree with GE Licensing's position. It is consistent with and supported by the '054 patent specification as well as extrinsic evidence. In the context of one embodiment described in the specification of the '054 patent, the "selector" is used "for selecting one of the plurality of frequency bands" (Col. 2:2-3), "selects the identified band as the selected band" (Col. 2:52-53), and is used "for selecting one of the plurality of bit rates" (Col. 3:51-52). A person of ordinary skill in the art would understand that the function of selecting is performed using any available means, including a decision algorithm, based on its plain meaning, and that it can be implemented in a general use processor or digital signal processor.

38. As described in paragraphs 29-31 above, the implementation of decision algorithms was well understood to be performed in hardware or software at the time of the '054 patent.

39. I understand that Agere states that the term "selector" of the '054 patent is indefinite or not enabled and Agere has not offered a proposed construction for this term. See Exhibit B to the Joint Submission of Proposed Construction of Claim Terms. I disagree with Agere's position to the extent it can be understood. One of ordinary skill in the art would have readily understood this term to be used in accordance with its plain meaning – any structure which is capable of running a decision algorithm. One of ordinary skill in the art would also have known that a "selector" could be implemented by any programmed general microprocessor or DSP, or by specific hardware devices – all known prior to 1989.

4. For Selecting One Of The Plurality Of Frequency Bands ('054 Patent) AND For Selecting One Of The Plurality Of Bit Rates ('054 Patent)

40. The term "for selecting one of the plurality of frequency bands" is recited in asserted claims 1 and 12 of the '054 patent and the term "for selecting one of the plurality of bit rates" is recited in asserted claim 46 of the '054 patent. I understand that GE Licensing proposes

that these terms should be construed in accordance with their plain meaning and that no specific construction is needed.

41. I agree with GE Licensing's construction. In a description of the preferred embodiments, the `054 patent specification states that "the selector selects the identified band as said selected band." `054 patent, col. 2:46-53. The `054 patent describes, in the context of another embodiment, that a "Modem 2 then executes a final decision algorithm to select the carrier frequencies baud rates and bit rates to be used for communication over channels A and B (step 220)." `054 patent, col. 14:1-4. The `054 patent also discloses an embodiment in which "the modem further includes logic for selecting one of the plurality of different bit rates based upon the measured characteristics of the receiver channel." `054 patent, col. 3:6-21, col. 3:41-55. This "logic for selecting" is also referred to in the specification as the operation of a "selector" that selects bit rates. One of ordinary skill in the art would understand that the selector is performing selection using any available means, including a decision algorithm, as specifically described in the specification in the context of one preferred embodiment. `054 patent, col. 14:8-53.

42. I am also aware that Agere takes a different position as to these terms and urges that the terms mean, respectively, "for determining a frequency band to be used for receiving a modulated signal from the remote device, based upon the channel characteristics measured by the line probing processor" and "for determining a bit rate to be used for receiving a modulated signal from the remote device, based upon the channel characteristics measured by the line probing processor." See Exhibit B to the Joint Submission of Proposed Construction of Claim Terms. I disagree with Agere's construction to the extent I understand it. Agere merely incorporates the remainder of the claim and substitutes "for determining" in place of "for

selecting." The substitution changes the meaning of the construction. The phrase "for determining" does not inform the reader that the selector has selected anything. Clearly it is more appropriate that the function of a selector is "for selecting."

B. CONSTRUCTION OF DISPUTED TERMS FOR THE '641 PATENT

1. Constellation ('641 Patent)

43. The term "constellation" is recited in the asserted claims of the '641 patent. I understand that GE Licensing proposes that the term "constellation" should be construed to mean "a finite set of points in a space."

44. I agree with GE Licensing's proposed construction. It is consistent with and supported by the '641 patent and specification as well as extrinsic evidence. To one of ordinary skill in the art, the `641 patent uses "constellation" throughout in a manner consistent with the construction "finite set of points in a space."

45. To one of ordinary skill in the art, "constellation" when used in the context of communications, has a well understood meaning, the same meaning adopted by GE Licensing. Modems transmit information in the form of "symbols" (or "bauds"), each of which represents a number of bits. One way to represent transmitted symbols is to label them as points in a mathematical space or "constellation points" that represent the symbols. It is this constellation – simply a mathematical construct to represent transmitted symbols – to which the `641 patent refers.

46. I am aware that Agere takes a different position and urges that the term means "the set of 2^n multi-dimensional signal points used to represent a mapping frame of n input data bits." See Exhibit B to the Joint Submission of Proposed Construction of Claim Terms. I disagree with Agere's proposed construction. First, a constellation size is not limited to a power of 2 number of signal points. As stated in Col. 3:60-63 of the '641 patent, "The integer M is

chosen such that $2^K \leq M^N$. The smallest integer for M that satisfies this condition is defined as M_{min}. When $M = M_{min}$, the constellation size is $L = M_{min} * 2^{u+c}$." Second, signal points are not necessarily multi-dimensional. Single-dimensional signal points were well known in the art at the time of the '641 patent. The addition of the "N-dimensional" language is unnecessary to this claim, and, importantly, the notion of limiting this term to "the set of 2^n multi-dimensional signal points" is unsupportable.

2. Constellation Switching ('641 Patent)

47. The term "constellation switching" is recited in the preamble of the asserted claims of the '641 patent. I understand that GE Licensing has taken the position that the preamble of the asserted claims is non-limiting.

48. I also understand that GE Licensing has proposed an alternative construction (if the preamble should be found limiting), that "constellation switching" means "a change between two constellations having different numbers of points." I agree. This construction is consistent with and supported by the '641 patent specification as well as extrinsic evidence. The '641 specification describes the term "constellation switching" in prior art examples as using two constellations having different numbers of points. In one example, the switching occurs between one constellation having 2^D points (where each point represents a symbol of D bits) and one having 2^{D-1} points (where each point represents a symbol of D-1 bits) in order to transmit an average fractional number of bits per symbol between D and D-1. '641 Patent, col. 1:47-53. In another example, the switching occurs on a frame basis to transmit a fractional number of bits Q per frame, where Q is between J and J-1. In this example, the switching between constellations occurs not on a symbol-by-symbol basis, but on a frame-by-frame basis. In other words, a frame with J-1 bits might switch the constellation for the first symbol in the frame to one with fewer numbers of points

than the frame with J bits. *Id.*, col. 2:16-19; col. 4:19-24. Both cases include switching between constellations having different numbers of points.

49. I am aware that Agere takes the position that the preambles of the asserted claims are limiting and that the term "constellation switching" means "using constellations with varying numbers of points for mapping multiple frames of data bits. See Exhibit B to the Joint Submission of Proposed Construction of Claim Terms. I disagree with Agere's position. Agere appears to construe "constellation switching" to include mapping requirements for multiple frames where one of ordinary skill in the art would not find that the term "constellation switching" limits itself to a specific use or function.

3. Frame Selector ('641 Patent), Zero Insertion Unit ('641 Patent), Signal Constellation Selector/Mapper ('641 Patent)

50. The term "frame selector" is recited in asserted claims 3 and 7 of the '641 patent. I understand that GE Licensing proposes that the term "frame selector" should be construed to mean "structure that can select the length of data in a frame." I understand that Agere proposes that the term "frame selector" be construed to mean "a hardware device for selecting a number of data bits to fill a frame" and that "frame selector" does not include devices storing or executing software such as a central processing unit (CPU) or a digital signal processor (DSP)."

51. The term "zero insertion unit" is recited in asserted claims 3 and 7 of the '641 patent. I understand that GE Licensing proposes that the term "zero insertion unit" should be construed to mean "structure that can insert a zero when required." I am aware that Agere takes a different position and urges that the term "zero insertion unit" be construed as "a hardware device for adding a zero to a frame of data bits" and includes the same exclusion "does not include devices storing or executing software such as a central processing unit (CPU) or a digital signal processor (DSP)."

52. The term "signal constellation selector/mapper" is recited in asserted claims 3 and 7 of the '641 patent. I understand that GE Licensing proposes that the term "signal constellation selector/mapper" should be construed to mean "structure that can select a signal constellation and can map frame bits onto constellation points." Agere has taken a different position and urges that the term "signal constellation selector/mapper" be construed as "a hardware device for selecting a constellation and mapping frames of data bits to signal points or symbols in such constellation" and again states that this term does not include devices storing or executing software such as a central processing unit (CPU) or a digital signal processor (DSP).

53. I agree with GE Licensing's proposed constructions. Each is consistent with and supported by the '641 patent specification. *See* '641 Patent, col. 8:2-17. Agere's proposed constructions are flawed. Each contains an exclusion of certain hardware devices (CPUs and DSPs) that can run software. As explained above in paragraphs 29-31, certainly by 1993 it was well known to use general microprocessors (CPUs)and DSPs in modems in this time period. One of ordinary skill in the art would have understood that these structures could have been programmed to perform the claimed tasks.

4. Operably Coupled ('641 Patent)

54. The term "operably coupled" is recited in asserted claims 3 and 7 of the '641 patent. I understand that GE Licensing proposes that the term "operably coupled" be construed to mean "whose input is derived from the output of another stage or structure." I am aware that Agere takes a different position and urges that the term "operably coupled" means "physically connected to allow inter-operation."

55. I agree with GE Licensing's construction for this term. The specification describes a specific embodiment using the term "operably coupled" without requiring any physical connections between structures. '641 Patent, col. 8:3-12. One of ordinary skill in the

art would understand that "operably coupled," in the context of the `641 patent, is not intended to indicate a physical connection.

C. CONSTRUCTION OF DISPUTED TERMS FOR THE '776 PATENT

1. Quantization Device ('776 Patent)

56. The term "quantization device" is recited in claims 1, 9, and 30 of the '776 patent. I understand that GE Licensing proposes that the term "quantization device" be construed to mean "a device that quantizes a signal."

57. I agree with GE Licensing's construction for this term. One of ordinary skill in the art would understand that the "quantization device" simply rounds its input value to one of a set of discrete output values. This is consistent with its use in the patent. In one embodiment, the `641 patent describes the "quantization device" in connection with a μ-law or A-law "quantizer 130 in central office (CO) 114." '776 Patent, col. 7:58-59; Fig. 9; *see also* col. 13:15-18 (quantizer 210 in central office (CO) 186); Fig. 16. In this embodiment, quantizer 130 rounds its input value to one of a set of discrete output values, taking the incoming analog signal and making it into octets or eight-bit digital words. *Id.*, col. 1:32-34; col. 7:63-65.

58. I am aware that Agere takes a different position and urges that the term means "a device that converts a signal with a continuum of amplitudes to a set of discrete values, including linear, A-law, μ-law or any other analog to digital conversion." I disagree with Agere's proposed construction because quantization is the process of rounding an input value to a discrete output value. Agere's proposed construction would limit the input value to an analog value, and a quantizer to an analog-to-digital converter, when indeed a quantizer does not restrict its input to be an analog value. A quantizer remains a quantizer even if its input happens to be a digital value.

2. Analog Pulse Code Modulation (PCM) Modem AND Upstream PCM Data Transmission ('776 Patent)

59. The terms "analog pulse code modulation (PCM) modem" and "upstream PCM data transmission" are recited in claim 30 of the '776 Patent. I understand that GE Licensing takes the position that the preamble of claim 30 is not limiting. I also understand that if the preamble of claim 30 is limiting, GE Licensing proposes that (a) the term "analog pulse code modulation (PCM) modem" be construed to mean "a client-side or end user modem connected to an analog phone line" and (b) the term "upstream PCM data transmission" should be construed to mean "transmission of analog levels in the direction from an analog PCM modem toward a central office."

60. If the preamble is limiting, I agree with GE Licensing's construction for these two terms. The term "Analog PCM modem" is used in several places in the specification of the '776 patent. In each instance, the term refers to an end user modem connected to an analog phone line. In the '776 patent specification, Figure 8 block 102, Figure 9 block 112, Figure 10 block 112', Figure 11 block 112a', Figure 15 block 174 and block 162 consistently depict an analog PCM modem in a telephony system as an end user modem connected to an analog phone line, and a digital PCM modem in a telephony system as a central site modem connected to an analog phone line. This distinction is further described in Col. 7:27-31 where the text refers to Figure 8, "With this system, PCM data may be transmitted both in the downstream direction (i.e., from digital PCM modem 108 to analog PCM modem 102) and in the upstream direction (i.e., from analog PCM modem 102 to digital PCM modem 108)." Numerous other examples in the specification of the '776 patent repeatedly teach these distinctions. Also, Figure 8 and Figure 15 are described as prior art by the inventors, with Figure 8 described as "a typical analog PCM modem to digital PCM modem communication system" (Col. 2:36-37) and Figure 15 described

as "a typical analog PCM modem to analog PCM modem communication system." (Col. 2:56-57). In both examples, an analog PCM modem depicted as an end user modem connected to an analog phone line is considered "typical" in the prior art, and would be understood by a person of ordinary skill in the art to be the correct construction.

61. I note that the term "upstream PCM data transmission" is used in asserted claim 30, and the term "PCM upstream transmission" is used in Col. 2:38-39, Col. 3:1-2, Col. 7:41-43, and Col. 8:2-8, and the term "upstream PCM transmission" is used in Col. 1:53-55. One of ordinary skill in the art would understand that these three terms are equivalent and will address all of them as "upstream PCM data transmission" below.

62. Referring again to the text of Col. 7:27-31, PCM data may be transmitted in the upstream direction from an analog PCM modem to a digital PCM modem. From Figure 8, Figure 9, Figure 10, Figure 11, and Figure 15 included in the specification, it is clear that this direction is towards the central office. As further described in the specification of the '776 patent at Col. 1:43-45, "With PCM upstream, the end user PCM modem transmits analog levels over the analog loop corresponding to data to be transmitted." A person of ordinary skill in the art would understand from these portions of the specification that GE Licensing's construction of "upstream PCM data transmission" is indeed the correct construction.

63. I am aware that Agere takes a different position and urges that the term "Analog pulse code modulation (PCM) modem" means "a modem that transmits pulse code modulated data over an analog line" and "upstream PCM data transmission" means "transmission of pulse code modulated data to a digital modem." I disagree with Agere's proposed construction of "analog pulse code modulation (PCM) modem" because it would imply that the central site PCM modem could be referred to as an analog PCM modem if it transmits downstream PCM data over

an analog line. This would be inconsistent with the extrinsic record. I disagree with Agere's proposed construction of "upstream PCM data transmission" because a digital modem can receive PCM data over a digital line. In fact, in telephony networks at the time of the '776 patent, PCM data was routinely transmitted to digital modems over T1 digital lines. Agere's construction of "upstream PCM data transmission" would include such transmissions, which is incorrect.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 28th day of April, 2008 in Menlo Park, California.

Harry Bims

WDC99 1560596-3.037743.0051

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CERTIFICATE OF SERVICE

I, Philip A. Rovner, hereby certify that on April 28, 2008, the within document was filed with the Clerk of the Court using CM/ECF; that the document was served on the following party as indicated; and that the document is available for viewing and downloading from CM/ECF.

BY HAND DELIVERY AND E-MAIL

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I hereby certify that on April 28, 2008 I have sent by E-mail the foregoing document to the following non-registered participants:

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EXHIBIT A

Dr. Harry V. Bims
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PROFESSIONAL SUMMARY

Harry Bims, PhD, EE, provides exceptional expert witness support services for telecommunications-related intellectual property litigation. These services include deposition and court testimony, expert reports, and infringement research, for patent, copyright, and trade secret litigation matters. He has 12+ years of telecommunications industry experience, and holds three US patents in network architecture and chip design for wireless communications.

EMPLOYMENT HISTORY

12/2001 - 05/2004 **AirFlow Networks, Inc. LLC • Sunnyvale, California**

Position: *CEO/CTO & Founder*

As the sole founder of the company, created the original business plan, raised venture capital, and hired the core engineering team. Grew the company to 32 people and shipped products for revenue in the US and overseas. Three patents on the core technology have issued. These patents, which relate to wireless network infrastructure based on the 802.11 specification, have been sold to Broadcom.

03/2001 - 12/2001 **Bay Partners LLC • Cupertino, California**

Position: *Entrepreneur in Residence*

Reported to the partners of this VC firm as a technology expert on a range of wireless and networking subjects. Reviewed business plans and participated in due diligence activities related to several startups seeking funding. Developed a business plan for a startup that builds network infrastructure for 802.11 enterprise networks.

09/1999 - 03/2001 **Symmetry Communications Systems LLC • San Jose, California**

Position: *Director, Software Architecture*

Reporting to the CEO, responsible for the software architecture of their

core SGSN and GGSN products for the GPRS market. Formulated a software technology roadmap, showing the evolution from 2.5G to 3G SGSN and GGSN products. Management responsibility for Firmware, Hardware, Performance, and Systems Engineering Groups. Provided management support of early field trials of the system on a global basis.

07/1999 - 09/1999 **T-SPAN Systems Corporation LLC • Palo Alto, California**

Position: *Member of Technical Staff*

Designed a wireless home LAN protocol for the company. Also designed and built a PC-based platform to demonstrate their technology. Company is now publicly traded as Atheros Communications.

07/1992 - 12/1998 **Glenayre Technologies-Wireless Access Group • San Jose, California**

Position: *Member of Technical Staff; Sr. Member of Technical Staff; Manager of NOC Systems*

Employee #6 at the company, which was acquired by Glenayre Technologies, Nov 1997. Designed and built a 4-channel ReFLEX50 pager demonstration in 1 week. Participated in early field trials and feasibility studies, culminating in a Pioneer's Preference license award from the FCC to SkyTel Corporation for Narrowband PCS development.

Invented, designed, and built from concept through full implementation, a patented two-way pager test system for the ReFLEX50 and ReFLEX25 protocols. This system was used throughout company operations for performance testing of the ReFLEX pager designs from Wireless Access, and Motorola. Over 16 systems were deployed around the country for manufacturing tests, engineering protocol tests, antenna tests, and pager repair tests.

The project required technical skills in PC hardware design, C++, object-oriented programming, signal processing techniques, NT device driver development, Win32 user interface development, real-time, multi-threaded control, and proficiency with wireless communications lab equipment. Three patents have been issued based on technical inventions in this capacity.

Co-developed a wireless application protocol for sending and receiving encrypted email messages over the paging channel. Led the project team that deployed a software encryption module based on this protocol for government agencies.

Protocomm Systems, LLC Consulting History

3/2007 – Present **Apple, Inc. • Cupertino, CA**

Position: *Technology Consultant*

Participating in IEEE 802.16 standards meetings as an affiliate of the client.

10/2006 – 11/2007 **Dechert, LLP • Mountain View, CA**

Position: *Technology Consultant*

Providing technology assessment on certain wireless communication patents.

10/2006 – 10/2006 **DLA Piper, LLP • East Palo Alto, California**

Position: *Technology Consultant*

Provided technology assessment on certain wireless communications patents.

7/2005 – 11/2005 **Heller Ehrman, LLP • Menlo Park, CA**

Position: *Technology Consultant*

Provided technology assessment on certain wireless communication patents.

04/1999 - 07/1999 **Gigabit Wireless, Inc. • San Jose, California**

Position: *Technical Leader*

Technical leader for the Wireless MAC design group. Responsible for comparative analysis of competing wireless MAC protocol standards. Responsible for the creation of a proprietary MAC protocol specification document, simulation of the protocol, and implementation in a prototype. Participated in early 802.16 protocol standards. This company was acquired by Intel Corporation.

Bims Laboratories, LLC Consulting History

10/2006 – Present **Andre-Troner • Melbourne, FL**

Position: *Technology Consultant*

Providing technology assessment on certain wireless communication patents.

10/2006 – Present **Dickstein Shapiro, LLP • Washington, DC**

Position: *Technology Consultant*

Performing engineering lab testing and analysis of remote access products.

Litigation Support Experience

2/2008 – Present **Client: LG Electronics, U.S. Philips Corporation, and Fujitsu, Inc.**

Case: Fujitsu Limited, et. al. v. Netgear, Inc.

Case No. 07-C-0710-C

Location: UNITED STATES DISTRICT COURT WESTERN DISTRICT OF WISCONSIN

Testifying expert in this patent case.

Attorneys: For Plaintiff: Heller Ehrman LLP, O'Melveny & Myers LLP, Morrison & Foerster LLP

For Defendant:

Status: Case ongoing

2/2008 – Present **Client: Cisco Systems, Inc.**

Case:	Commil USA, LLC v. Cisco Systems, Inc., et. al.
	Case No. 2:07-cv-00341-DF-CE
Location:	
	Testifying expert in this patent case.
Attorneys:	For Plaintiff:
	For Defendant: Simpson Thacher & Bartlett LLP
Status:	Case ongoing

6/2007 – Present	**Client: Hewlett-Packard Corporation**
Case:	Microsoft Corporation, Apple Computer, Inc., Hewlett-Packard Company, and Netgear, Inc v. Commonwealth Scientific and Industrial Research Organisation
	Case No. 6:06-cv-00549-LED
Location:	UNITED STATES DISTRICT COURT NORTHERN DISTRICT OF CALIFORNIA
	Testifying expert in this patent case involving wireless LAN protocols.
Attorneys:	For Plaintiff: Fulbright & Jaworski
	For Defendant: Townsend & Townsend
Status:	Case ongoing

10/2006 – Present	**Client: Comcast Corporation**
Case:	Rembrandt Technologies, Inc. v. Comcast Corporation
	Case No. 2-05CV-000443 (TJW)
Location:	UNITED STATES DISTRICT COURT EASTERN DISTRICT OF TEXAS
	Testifying expert in this patent case involving physical layer and data link layer communication protocols for cable networks.

Videotaped Deposition:

12-22-06 Regarding claim construction opinions

Attorneys: For Plaintiff: McKool Smith

For Defendant: Keker & Van Nest

Status: Case ongoing

3/2007 – 5/2007 **Client: MLR, LLC**

Case: MLR, LLC v. Kyocera Wireless Corporation and Novatel Wireless, Inc.

Case No. 05-CV-0935 B (AJB)

Location: UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF CALIFORNIA

Testifying expert in this patent case involving cellular phone technology.

Expert Report:

04-20-07 Expert Report regarding infringement

Attorneys: For Plaintiff: Niro, Scavone, Haller, and Niro

For Defendant: Hogan & Hartson, LLP

Status: Case settled

6/2006 – 10/2006 **Client: Ericsson, Inc.**

Case: Fenner Investments, Ltd., v. Juniper Networks, Inc. et. al.
Case No. 2:05–CV–05 JDL

Location: UNITED STATES DISTRICT COURT EASTERN DISTRICT OF TEXAS

Testifying expert in this patent case involving wireless communications services.

Expert report regarding infringement and invalidity

5-23-06 Rebuttal expert report regarding infringement and invalidity

Attorneys: For Plaintiff: Fulbright & Jaworski

For Defendant Ericsson: Thompson & Knight

Status: Case settled

12/2003 – 5/2006 **Client: McKesson Information Solutions, Inc.**

Case: McKesson Information Solutions, Inc. vs. Bridge Medical, Inc.
Case No. CIV S-02-2669 FCD KJM

Location: UNITED STATES DISTRICT COURT EASTERN DISTRICT OF CALIFORNIA

Testifying expert in this patent case involving a patient on a patient identification and verification system that incorporates wireless technology.

Inequitable Conduct Trial live testimony:
5-04-06

Markman Hearing live testimony:
6-29/30-05

Videotaped Depositions:
2-14-04, 6-3-05

Declarations:
12-1-03 Dec. in support of MISI's Opening/Opposition re Claim Construction
12-24-04 Dec. in support of MISI's Motion for Preliminary Injunction
3-1-04 Dec. in support of Claim Construction
6-29-04 Dec. re meaning of "Communication"
7/15/05 Dec. in support of MISI's Opposition to Bridge's Motion for Summary Judgment

Attorneys: For Plaintiff: Morrison & Foerster

For Defendant: Howrey Simon, Winston & Strawn, Morgan Lewis

Status: Case closed.

07/2003 – 02/2006 **Client: Texas Instruments, Inc.**

Case: Texas Instruments, Inc. and Stanford University vs. GlobespanVirata, Inc.

Provided discovery of evidence used at trial, concerning the structure and operation of Globespan's ADSL products, and supported litigators in depositions of Globespan engineers.

Attorneys: For Plaintiff: Heller Ehrman

For Defendant: Covington & Burling, LLP

Status: Case settled.

Patents

Patent Number	Date Issued	Title
6,965,769	Nov 15, 2005	Testing Center
6,862,448	Mar 1, 2005	Token-based receiver diversity
6,788,658	Sep 7, 2004	Wireless communication system architecture having split MAC layer
6,760,318	Jul 6, 2004	Receiver diversity in a communication system
6,557,134	Apr 29, 2003	ARQ method for wireless communication
6,259,911	Jul 10, 2001	Network operations center hardware and software design
7,149,196	Dec 12, 2006	Location tracking in a wireless communication system using power levels of packets received by repeater
7,236,470	Jun 26, 2007	Tracking multiple interface connections by mobile stations

Education

Year	College/University	Degree
1993	Stanford University	PhD, Electrical Engineering
1988	Stanford University	MS, Electrical Engineering
1985	Rensselaer Polytechnic Institute	BS, Computer and Systems Engineering

Publications

Bims, Harry. "Surveying the Wireless LANdscape. Or Why Large Wi-Fi Networks Require Good Planning." Xchange. [Online] Available http://www.xchangemag.com/articles/391supsys1.html, September 1, 2003.

Bims, Harry. "Building Voice-Ready Wireless LANs" Wireless Week. [Online] Available http://www.wirelessweek.com/article/CA319429.html?spacedesc=Departments, September 1, 2003.

Bims, H. and Cioffi. J. "Trellis Coding for Full-Response CPM", *Third Generation Wireless Information Networks*, Kluwer Academic Publishers, 1992.

Bims, H. and Cioffi. J. "Trellis Coding for Full-Response CPM", *WINLAB WORKSHOP*, East Brunswick, NJ. October 18-19, 1990.

Bims, H. and Cioffi, J. "Trellis Coding for Partial-Response CPM", *1991 International Symposium on Information Theory*, Budapest, Hungary. June 24-28, 1991.

Bims, H. and Cioffi, J. "Trellis Coding with M-ary MSK Constraints", *GLOBECOM '89*, Dallas TX. Nov. 1989.

Professional Associations and Achievements

- Nov 2007 - Present Secretary, 802.16 License Exempt Group
- Feb 2002 – Present Member, City of Menlo Park Planning Commission (2006 Chairperson, 2005 Vice-Chairperson)

- Jan 1996 – Present Member, IEEE Society
- Jan 2000 – Dec 2000 Chair, IEEE Engineering Management Society – Silicon Valley Chapter
- Jun 1985 - Jun 1991 AT&T Bell Laboratories Cooperative Research Fellow